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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
FORMAN, BETTY J	

ART UNIT	PAPER NUMBER
1634	

DATE MAILED: 07/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/748,706	CHEE ET AL.	
	Examiner	Art Unit	
	BJ Forman	1634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 May 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *40-54* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *40-54* is/are rejected.

7)☒ Claim(s) *49* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5 May 2004 has been entered.

Status of the Claims

2. This action is in response to papers filed 5 May 2004 in which a clean copy of the claims as amended on 13 April 2004 was submitted and the outstanding rejections were discussed.

The previous rejections in the Office Action dated 5 February 2004, not reiterated below, are withdrawn in view of the amendments. Applicant's arguments have been thoroughly reviewed but are deemed moot in view of the amendments, withdrawn rejections and new grounds for rejection. New grounds for rejection are discussed.

Claims 40-54 are under prosecution.

Claim Objections

3. Claim 49 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel

the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Independent Claims 40 and 42 defines the IBL as being different from the bioactive agent. Claim 49 defines the IBL and bioactive agents as being different molecules. However, if the IBL is different from the bioactive agent, it cannot be the same molecule. Hence, the different molecule limitation of Claim 49 does not further limit the different from limitations of Claims 40 and 42.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 40-49 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The recitation "wherein said identifier binding ligand is directly attached to said microsphere" is added to the amended independent claims 40 and 42 from which Claims 41 and 43-49 depend. However, the specification fails to define or provide any disclosure to support such claim recitation. Applicant points to page 15, lines 16-35 and figure 10 for support of the newly claimed "directly attached". The cited passage describes numerous microsphere-ligand attachments e.g. chemical, affinity capture, hybridization, cross-linking, electrostatic, biotin-streptavidin, covalent, non-covalent, oligo-amino functional group attachment and etc. Neither the cited passage, nor the remaining text of the specification,

describe which of the recited attachments are encompassed by the newly claimed "directly attached". Hence, the cited passage does not define or describe the newly claimed "directly attached" in such a way as to reasonably convey to one of skill in the art that applicant was in possession of the claimed invention at the time the application was filed.

For purposes of examination, the claimed "directly attached" is interpreted as encompassing all of the attachment described in the passages cited by Applicant.

MPEP 2163.06 notes "IF NEW MATTER IS ADDED TO THE CLAIMS, THE EXAMINER SHOULD REJECT THE CLAIMS UNDER 35 U.S.C. 112, FIRST PARAGRAPH - WRITTEN DESCRIPTION REQUIREMENT. *IN RE RASMUSSEN*, 650 F.2D 1212, 211 USPQ 323 (CCPA 1981)." MPEP 2163.02 teaches that "Whenever the issue arises, the fundamental factual inquiry is whether a claim defines an invention that is clearly conveyed to those skilled in the art at the time the application was filed...If a claim is amended to include subject matter, limitations, or terminology not present in the application as filed, involving a departure from, addition to, or deletion from the disclosure of the application as filed, the examiner should conclude that the claimed subject matter is not described in that application." MPEP 2163.06 further notes "WHEN AN AMENDMENT IS FILED IN REPLY TO AN OBJECTION OR REJECTION BASED ON 35 U.S.C. 112, FIRST PARAGRAPH, A STUDY OF THE ENTIRE APPLICATION IS OFTEN NECESSARY TO DETERMINE WHETHER OR NOT "NEW MATTER" IS INVOLVED. *APPLICANT SHOULD THEREFORE SPECIFICALLY POINT OUT THE SUPPORT FOR ANY AMENDMENTS MADE TO THE DISCLOSURE*" (emphasis added).

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 40-45 and 47-53 are rejected under 35 U.S.C. 102(b) as being anticipated by Chandler et al (WO 97/14028, published 17 April 1997).

Regarding Claim 40, Chandler et al disclose a method comprising providing an array composition comprising at least first and second populations of microspheres, each population comprising a bioactive agent (reactant) and first and second decoding attributes, one of which

is a identifier binding ligand directly attached to the microspheres and detecting each of the decoding attributes to identify the bioactive agent. Chandler teaches the claimed microspheres comprising first and second decoding attributes.

In one embodiment bioactive agent is an antigen, the second decoding attribute comprises the classification parameter value measurable in a flow cytometer (page 7, lines 5-14) and a first decoding attribute e.g. antigen-specific antibody attached to the microsphere via affinity capture as encompassed by the specification (page 15, lines 17-18). Chandler et al teaches detection of the second decoding attribute via detection of secondary antibody (e.g. page 10, lines 13-24 and page 35, line 4-page 36, line 12).

In another embodiment, the bioactive agent is the primary antibody, the second decoding attribute comprises the classification parameter value measurable in a flow cytometer (page 7, lines 5-14) and a first decoding attribute (IBL) is the antigen directly attached to the microsphere (page 35, lines 13-20) wherein detecting the classification parameter and antigen via detection of the secondary antibody identifies the primary antibody (page 10, lines 13-24 and page 35, line 4-page 36, line 12).

Regarding Claim 41, Chandler et al disclose the method wherein detecting comprises detecting binding of a decoder binding ligand (i.e. secondary antibody) to the IBL (page 10, lines 13-24 and page 35, line 4-page 36, line 12).

Regarding Claim 42, Chandler et al disclose a method comprising providing an array composition comprising at least first and second populations of microspheres, each population comprising a bioactive agent (reactant) and first and second decoding attributes, one of which is a identifier binding ligand directly attached to the microspheres, detecting each of the decoding attributes to identify the bioactive agent and detecting binding of a first target analyte to the bioactive agent i.e. inhibitor secondary antibody (page 40, lines 9-28). Chandler teaches the claimed microspheres comprising first and second decoding attributes.

In this embodiment, the bioactive agent is the primary antibody, the second decoding attribute comprises the classification parameter value measurable in a flow cytometer (page 7, lines 5-14) and a first decoding attribute (IBL) is the antigen directly attached to the microsphere (page 35, lines 13-20) wherein detecting the classification parameter and antigen via detection of the secondary antibody identifies the primary antibody (page 10, lines 13-24 and page 35, line 4-page 36, line 12) wherein binding of a first target analyte (i.e. soluble antibody) is detected by detecting a reduced signal (page 40, lines 9-28).

Regarding Claim 43, Chandler et al disclose the method wherein the IBL comprises a nucleic acid i.e. DNA replaces antibodies (page 10, lines 28-30).

Regarding Claim 44, Chandler et al disclose the method wherein the second decoding attribute is microsphere size (page 7, lines 5-10).

Regarding Claim 45, Chandler et al disclose the method wherein first and second attributes are IBLs (i.e. multiple copies of the same IBL) wherein the IBLs are attached to the first and second subpopulations at differing ratios (i.e. concentrations (page 8, line 25-page 9, line 14).

Regarding Claim 47, Chandler et al disclose the method wherein the array is a liquid array i.e. carried out in solution (e.g. page 35, line 26-page 36, line 12).

Regarding Claim 48, Chandler et al disclose the method wherein the array the detecting is via FACS (page 2).

Regarding Claim 49, Chandler et al disclose the method wherein the bioactive agent and IBL are different molecules e.g. antibody-antigen (page 10, lines 13-24 and page 35, line 4-page 36, line 12).

Regarding Claim 50, Chandler et al disclose a method comprising providing an array composition comprising at least first and second populations of microspheres, each population comprising a bioactive agent (reactant) and first and second decoding attributes, one of which is a identifier binding ligand directly attached to the microspheres and detecting each of the

decoding attributes to identify the bioactive agent and wherein the second decoding attribute comprises a physical attribute e.g. microsphere size or presence of fluorochrome (page 7, lines 5-10).

In one embodiment bioactive agent is an antigen, the second decoding attribute comprises the classification parameter value measurable in a flow cytometer (page 7, lines 5-14) and a first decoding attribute e.g. antigen-specific antibody attached to the microsphere via affinity capture as defined in the specification (page 15, lines 17-18). Chandler et al teaches detection of the second decoding attribute via detection of secondary antibody (e.g. page 10, lines 13-24 and page 35, line 4-page 36, line 12).

In another embodiment, the bioactive agent is the primary antibody, the second decoding attribute comprises the classification parameter value measurable in a flow cytometer (page 7, lines 5-14) and a first decoding attribute (IBL) is the antigen directly attached to the microsphere (page 35, lines 13-20) wherein detecting the classification parameter and antigen via detection of the secondary antibody identifies the primary antibody (page 10, lines 13-24 and page 35, line 4-page 36, line 12).

Regarding Claim 51, Chandler et al disclose a method comprising providing an array composition comprising at least first and second populations of microspheres, each population comprising a bioactive agent (reactant) and first and second decoding attributes, one of which is a identifier binding ligand directly attached to the microspheres and detecting each of the decoding attributes to identify the bioactive agent and wherein the second decoding attribute comprises a physical attribute and wherein the first and second decoding attributes are independent of each other.

In one embodiment bioactive agent is an antigen, the second decoding attribute comprises the classification parameter value measurable in a flow cytometer (page 7, lines 5-14) and a first decoding attribute e.g. antigen-specific antibody attached to the microsphere via affinity capture as defined in the specification (page 15, lines 17-18). Chandler et al teaches

detection of the second decoding attribute via detection of secondary antibody (e.g. page 10, lines 13-24 and page 35, line 4-page 36, line 12).

In another embodiment, the bioactive agent is the primary antibody, the second decoding attribute comprises the classification parameter value measurable in a flow cytometer (page 7, lines 5-14) and a first decoding attribute (IBL) is the antigen directly attached to the microsphere (page 35, lines 13-20) wherein detecting the classification parameter and antigen via detection of the secondary antibody identifies the primary antibody (page 10, lines 13-24 and page 35, line 4-page 36, line 12).

Regarding Claim 52, Chandler et al disclose a method comprising providing an array composition comprising at least first and second populations of microspheres, each population comprising a bioactive agent (reactant) and first and second decoding attributes, one of which is a identifier binding ligand directly attached to the microspheres and detecting each of the decoding attributes to identify the bioactive agent and wherein the second decoding attribute comprises a physical attribute and wherein the first and second decoding attributes are independent of each other.

In this embodiment, the bioactive agent is the primary antibody, the second decoding attribute comprises the classification parameter value measurable in a flow cytometer (page 7, lines 5-14) and a first decoding attribute (IBL) is the antigen covalently attached to the microsphere (page 35, lines 13-20) wherein detecting the classification parameter and antigen via detection of the secondary antibody identifies the primary antibody (page 10, lines 13-24 and page 35, line 4-page 36, line 12).

Regarding Claim 53, Chandler et al disclose the method wherein the IBL is chemically attached to the microsphere (page 35, lines 13-14).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claim 46 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chandler et al (WO 97/14028, published 17 April 1997) in view of Kamb et al U.S. Patent No. 6,060,240, filed 13 December 1996).

Regarding Claim 46, Chandler et al teach the method wherein the bioactive agents are detected by cell-sorting fluorescence (e.g. page 9, line 4-page 10, line 24) but they are silent regarding distribution of the microsphere on a substrate.

Kamb et al teach a similar method comprising: providing an array composition comprising a population of microspheres comprising at least a first and second subpopulation each comprising a bioactive agent decoding attributes and detecting each of said decoding attributes to identify each of said bioactive agents (Column 22, line 58-Column 23, line 64 and Fig. 15 B) wherein following detection via cell-sorting fluorescence, the subpopulations are distributed onto a substrate e.g. 96 well plate for further analysis of the populations i.e. sequencing or cloning (Column 37, lines 55-67 and Fig. 14).

It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to apply the subpopulation distribution of Kamb et al to the subpopulations of Chandler et al to thereby provide for further analysis of the subpopulations as desired by Kamb et al (Column 37, lines 55-67 and Fig. 14).

10. Claim 54 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chandler et al (WO 97/14028, published 17 April 1997) in view of Dynal® (Biomagnetic Techniques in Molecular Biology, technical handbook, 1998, page 165).

Regarding Claim 52, Chandler et al disclose a method comprising providing an array composition comprising at least first and second populations of microspheres, each population comprising a bioactive agent (reactant) and first and second decoding attributes, one of which is a identifier binding ligand directly attached to the microspheres and detecting each of the decoding attributes to identify the bioactive agent and wherein the second decoding attribute comprises a physical attribute and wherein the IBL is covalently attached to the microsphere (page 35, lines 13-20)

In this embodiment, the bioactive agent is the primary antibody, the second decoding attribute comprises the classification parameter value measurable in a flow cytometer (page 7, lines 5-14) and a first decoding attribute (IBL) is the antigen directly attached to the microsphere (page 35, lines 13-20) wherein detecting the classification parameter and antigen via detection of the secondary antibody identifies the primary antibody (page 10, lines 13-24 and page 35, line 4-page 36, line 12).

Chandler teaches direct attachment using techniques known in the art (page 35, lines 13-20) but they do not specifically teach attachment of biotinylated ligands to streptavidin coated microspheres. However, the claimed attachment was well known in the art at the time the claimed invention was made as taught by Dynel® who teach biotinylated nucleic acids or proteins attached to streptavidin coated microspheres allows the nucleic acids or proteins to be "easily manipulated for a range of procedures" and thus enables experimental procedures to be "accomplished simply and readily." (page 165). It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to apply the biotinylated ligand attachment to streptavidin coated microspheres taught by Dynel® to the ligand-microsphere

attachment of Chandler for the benefits of easy ligand manipulation and thus enabling experimental procedures to be "accomplished simply and readily." (page 165).

Conclusion

11. No claim is allowed.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BJ Forman whose telephone number is (571) 272-0741. The examiner can normally be reached on 6:00 TO 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Benzion can be reached on (571) 272-0782. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

> Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to (571) 272-0547.

Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent application status and history information. It also enables applicants to view the scanned images of their own application file folder(s) as well as general patent information available to the public.

For all other customer support, please call the USPTO Call Center (UCC) at 800-786-9199.

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Art Unit: 1634
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